

IN THE CLAIMS

1. (currently amended) A recombinant plant cell or part thereof containing a DNA molecule comprising a sequence encoding a wild-type PAP II designated as SEQ ID NO:4 or PAP II (1-285) which is amino acid residues 26-310 of SEQ ID NO:4, or an analog of said wild-type PAP II and which contains E172, numbered in accordance with PAP II (1-285), and wherein said analog exhibits anti-viral and/or anti-fungal activity-protein.

2. (original) The recombinant plant cell of claim 1 wherein said plant cell part is a protoplast.

3. (currently amended) The recombinant plant cell of claim 1 wherein said sequence is denoted as SEQ ID NO:43.

4. (original) The recombinant plant cell of claim 1 wherein said sequence encodes PAP II (1-285).

5. (currently amended) The recombinant plant cell of claim 1 wherein said sequence encodes a ~~mutant~~ an analog of said wild-type PAP II protein that has intact catalytic active site amino acid residue ~~(E1-72)~~ E172, and wherein said analog exhibits anti-viral and/or anti-fungal activity.

6. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein which is PAP II (1-285, G72D).

7. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein which is PAP II (1-285, L254R).

8. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein which is PAP II (1-285, L254A).

9. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein which is PAP II (1-237).

10. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein which is PAP II (1-259).

11. (withdrawn) The recombinant plant cell of claim 5 wherein said sequence encodes a PAP II protein selected from the group consisting of PAP II (1-237), PAP II (1-238), PAP II (1-239), PAP II (1-240), PAP II (1-241), PAP II (1-242), PAP II (1-243), PAP II (1-244), PAP II (1-245), PAP II (1-246), PAP II (1-247), PAP II (1-248), PAP II (1-249), PAP II (1-250), PAP II (1-251), PAP II (1-252), PAP II (1-253), PAP II (1-254), PAP II (1-255), PAP II (1-256), PAP II (1-257), PAP II (1-258) and PAP II (1-259).

12. (original) A transgenic plant produced from the protoplast of claim 2.

13. (withdrawn) A transgenic plant or part thereof comprising a DNA molecule encoding a PAP II protein that upon expression exhibits anti-viral and/or anti-fungal activity.

14. (withdrawn) The transgenic plant of claim 13 which is a monocot plant.

15. (withdrawn) The transgenic plant of claim 14 wherein said monocot plant is a cereal crop plant.

16. (withdrawn) The transgenic plant of claim 13 which is a dicot plant.

17. (withdrawn) Seed derived from the transgenic plant of claim 13.

18. (currently amended) A DNA molecule comprising a sequence encoding a ~~mutant~~ analog of wild-type PAP II ~~protein~~ designated as SEQ ID NO:4 or amino acid residues 26-310 thereof, wherein said analog comprises ~~having intact catalytic active site~~ amino acid residue (E172), numbered in accordance with PAP II (1-285), and wherein said analog exhibits anti-viral and/or anti-fungal activity.

19. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein which is PAP II (1-285, G72D).

20. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein which is PAP II (1-285, L254R).

21. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein which is PAP II (1-285, L254A).

22. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein which is PAP II (1-237).

23. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein which is PAP II (1-259).

24. (withdrawn) The DNA molecule of claim 18 wherein said sequence encodes a PAP II protein selected from the group consisting of PAP II (1-237), PAP II (1-238), PAP II (1-239), PAP II (1-240), PAP II (1-241), PAP II (1-242), PAP II (1-243), PAP II (1-244), PAP II (1-245), PAP II (1-246), PAP II (1-247), PAP II (1-248), PAP II (1-249), PAP II (1-250), PAP II (1-251), PAP II (1-252), PAP II (1-253), PAP II (1-254), PAP II (1-255), PAP II (1-256), PAP II (1-257), PAP II (1-258) and PAP II (1-259).

25. (withdrawn) An isolated and purified mutant PAP II protein having intact catalytic active site amino acid residue (E172) and exhibits anti-viral and/or anti-fungal activity.

26. (withdrawn) The PAP II protein of claim 25 which is PAP II (1-285, G72D).

27. (withdrawn) The PAP II protein of claim 25 which is PAP II (1-285, L254R).

28. (withdrawn) The PAP II protein of claim 25 which is PAP II (1-285, L254A).

29. (withdrawn) The PAP II protein of claim 25 which is PAP II (1-237).

30. (withdrawn) The PAP II protein of claim 25 which is PAP II (1-259).

31. (withdrawn) The PAP II protein of claim 25 which is selected from the group consisting of PAP II (1-237), PAP II (1-238), PAP II (1-239), PAP II (1-240), PAP II (1-241), PAP II (1-242), PAP II (1-243), PAP II (1-244), PAP II (1-245), PAP II (1-246), PAP II (1-247), PAP II (1-248), PAP II (1-249), PAP II (1-250), PAP II (1-251), PAP II (1-252), PAP II (1-253), PAP II (1-254), PAP II (1-255), PAP II (1-256), PAP II (1-257), PAP II (1-258) and PAP II (1-259).

32. (previously presented) A vector comprising the DNA molecule of claim 18.

33. (withdrawn) A method of making a plant that has increased resistance to viruses and/or fungi, comprising preparing a plant that expresses a DNA molecule comprising a sequence encoding a PAP II protein.

34. (withdrawn) The method of claim 33 comprising stably transforming a protoplast with the DNA molecule, and generating a plant from the transformed protoplast.

35. (withdrawn) The method of claim 33 comprising introducing the DNA molecule into a plant part, and regenerating a whole plant from the plant part containing the DNA molecule.

36. (withdrawn) A method of identifying a PAP II protein having reduced cytotoxicity, comprising:

- (a) providing a eukaryotic cell stably transformed with a DNA molecule comprising a sequence encoding a PAP II protein, operably linked to an inducible promoter functional in said eukaryotic cell;

- (b) culturing the transformed cell in medium;

- (c) adding an inducer to said medium; and

- (d) determining extent of growth of the cultured cell.

37. (withdrawn) The method of claim 36 wherein said eukaryotic cell is a yeast cell.